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(71) Applicant and

(72) Inventor: CLIFFORD, Nicholas, Guy [AU/AU]; 16/3 East Crescent Street, Mcmahons Point, NSW 2060 (AU).

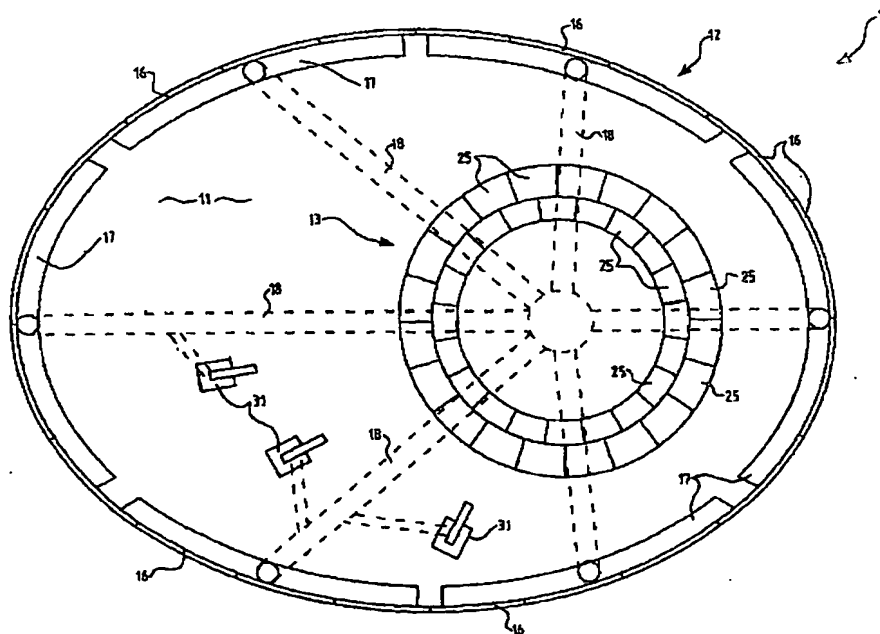
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(74) Agent: DUMMER, Peter, C.; Wallington-Dummer, Suite 904, 37 Bligh Street, GPO Box 3888, Sydney, NSW 2001 (AU).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: RECREATION RANGE



(57) Abstract: A recreation range system (10) including a field (11) and a rotatable range carousel (13).

RECREATION RANGE

The present invention relates to facilities adapted for activities related to aspects of sport and, in particular, where elements of a particular sport may be practiced for amusement or personal improvement.

BACKGROUND

Facilities specifically adapted to the practice of either all or some of the aspects of a particular sport are known. For example bowling alleys and bowling greens provide such facilities where all aspects of the games of pin and lawn bowling may be performed. Examples of facilities providing for the practice of certain aspects of a game are mini golf ranges, putting greens and golf driving ranges.

In the latter example, players are provided with a play station or position where golf balls and other equipment is provided together with amenities so as to allow a player to practice a variety of golf strokes in a convenient environment.

Such facilities are not available for large ball games such as for example the game of soccer. Practice of this particular game for example can only be performed in a sufficiently open space where for a single player ball return becomes at least tedious. As well there is little

variation possible, particularly for an individual wishing to improve his or her ball skills, either for amusement or for serious practice.

It is an object of the present invention to address or
5 ameliorate at least one of the above disadvantages.

BRIEF DESCRIPTION OF INVENTION

Accordingly, in one broad form of the invention there is provided a recreation range system including a field and a rotatable range carousel.

10 Preferably said range carousel is provided with at least one player level wherein the periphery of said player level is divided into a plurality of player lanes, said player lanes provided with ball delivery means and said field provided with ball retrieval means.

15 Preferably the periphery of said field is provided with a plurality of target structures.

Preferably said carousel is offset from the center of said field.

20 Preferably said field slopes downwardly from said carousel to said periphery of said field.

Preferably said field is constructed as a suspended surface overlying a substantially dished subsurface.

The recreation range system of claim 1 wherein said carousel is provided with two player levels; an upper level

and a lower level arranged one above the other around a central support column.

Preferably said central support column is rotatably supported, said column and said carousel adapted to be
5 urged in circular motion by a power source acting through a drive train.

Preferably said ball delivery means and said ball retrieval means are adapted to process a range of ball sizes.

10 Preferably said ball delivery means and said ball retrieval means are provided with a plurality of balls, each of said balls provided with a unique electronically readable ball recognition code.

Preferably said ball retrieval means is adapted to
15 return balls from the periphery of said field to said central support column.

Preferably said ball retrieval means includes a plurality of ball collection troughs disposed around the periphery of said field, each of said collection troughs
20 communicating with said central support column by underground shafts sloping downwardly from said periphery towards said central support column.

Preferably said ball retrieval means includes a plurality of openings along the periphery of said field,

said openings allowing balls to drop to said dished subsurface.

Preferably said ball delivery means is provided with a ball collections and sorting chamber adapted to sort said
5 ball sizes and deliver sorted balls to designated said player lanes.

Preferably a player urges a ball to follow a trajectory from one of said player lanes in a generally radial direction from said range carousel towards said
10 periphery of said field.

Preferably a ball urged by said player from said player lane towards said periphery of said field is tracked electronically.

Preferably said target structures are adapted to
15 display a variety of target images.

Preferably said target images are provided with electronic sensor means adapted to record the impact of a ball and the recognition code of said ball.

Preferably said target images are associated with a
20 point credit system, said credit system adapted to award credit points to a player when a ball urged by said player strikes said target image.

Preferably said field may be adapted to display a number of target areas, said target areas provided with

sensors to detect the impact of a ball and the recognition code of said ball.

Preferably said credit points accruing to a player are electronically displayed on display means at the player
5 lane used by said player.

Preferably said credit points accrued to a player during a player session are stored in a central database storage facility as a score, said score being available for retrieval from said database for display at subsequent
10 player sessions.

Preferably said scores stored in said database storage facility are available for printout.

Preferably said scores are associated with a prize conferring system.

15 Preferably said field is provided with a plurality of ball mortars arranged radially and at various distances from the center of said range carousel, said ball mortars adapted to urge a ball into any one of a range of specified trajectories, said trajectories ending in the
20 area of a player lane.

Preferably said trajectories are adapted to present a ball to a said player on said player lane simulating a range of ball approaches to a player as experienced in a game of soccer.

Preferably said ball retrieval means is adapted to provide said balls on demand to said ball mortars.

Preferably said carousel is provided with amenities, said amenities including a kiosk.

5 Preferably said upper player level is provided with a safety net extending radially outward from the periphery of said player level.

In a further broad form of the invention there is provided a method for operating a recreation range, said
10 recreation range including a field and a rotatable range carousel, said range carousel provided with at least one player level wherein the periphery of said player level is divided into a plurality of player lanes, said player lanes provided with ball delivery means and said field provided
15 with ball retrieval means; said method comprising conveying players on a arcuate path over a portion of said range.

Preferably said field is of generally ovoid shape.

Preferably the periphery of said field is provided with a plurality of target structures.

20 Preferably said carousel is offset from the center of said ovoid shape.

Preferably the surface of said field slopes downwardly from said carousel to said periphery of said field.

Preferably said field is constructed as a suspended surface overlying a substantially dished subsurface.

Preferably said carousel is provided with two player levels; an upper level and a lower level arranged one above
5 the other around a central support column.

Preferably said central support column is rotatably supported, said column and said carousel adapted to be urged in circular motion by a power source acting through a drive train.

10 Preferably said ball delivery means and said ball retrieval means are adapted to process a range of ball sizes.

Preferably said ball delivery means and said ball retrieval means are provided with a plurality of balls,
15 each of said balls provided with a unique electronically readable ball recognition code.

Preferably said ball retrieval means is adapted to return balls from the periphery of said field to said central support column.

20 Preferably said ball retrieval means includes a plurality of ball collection troughs disposed around the periphery of said field, each of said collection troughs communicating with said central support column by

underground shafts sloping downwardly from said periphery towards said central support column.

Preferably said ball retrieval means includes a plurality of openings along the periphery of said field, 5 said openings allowing balls to drop to said dished subsurface.

Preferably said ball delivery means is provided with a ball collections and sorting chamber adapted to sort said ball sizes and deliver sorted balls to designated said 10 player lanes.

Preferably a player urges a ball to follow a trajectory from one of said player lanes in a generally radial direction from said range carousel towards said periphery of said field.

15 Preferably a ball urged by said player from said player lane towards said periphery of said field is tracked electronically.

Preferably said target structures are adapted to display a variety of target images.

20 Preferably said target images are provided with electronic sensor means adapted to record the impact of a ball and the recognition code of said ball.

Preferably said target images are associated with a point credit system, said credit system adapted to award

credit points to a player when a ball urged by said player strikes said target image.

Preferably said field may be adapted to display a number of target areas, said target areas provided with
5 sensors to detect the impact of a ball and the recognition code of said ball.

Preferably said credit points accruing to a player are electronically displayed on display means at the player lane used by said player.

10 Preferably said credit points accrued to a player during a player session are stored in a central database storage facility as a score, said score being available for retrieval from said database for display at subsequent player sessions.

15 Preferably said scores stored in said database storage facility are available for printout.

Preferably said scores are associated with a prize conferring system.

Preferably said field is provided with a plurality of
20 ball mortars arranged radially and at various distances from the center of said range carousel, said ball mortars adapted to urge a ball into any one of a range of specified trajectories, said trajectories ending in the area of a player lane.

Preferably said trajectories are adapted to present a ball to a said player on said player lane simulating a range of ball approaches to a player as experienced in a game of soccer.

5 Preferably said ball retrieval means is adapted to provide said balls on demand to said ball mortars.

Preferably said carousel is provided with amenities, said amenities including a kiosk.

10 Preferably said ball retrieval means is adapted to provide said balls on demand to said ball mortars.

Preferably said upper player level is provided with a safety net extending radially outward from the periphery of said player level.

BRIEF DESCRIPTION OF THE DRAWINGS

15 Embodiments of the present invention will now be described with reference to the accompanying drawings wherein:

Figure 1 is a plan view of recreation range according to a preferred embodiment of the invention.

20 Figure 2 is a sectioned elevation view of the recreation range of figure 1.

Figure 3 is an enlarged portion of the section elevation view of figure 2.

Figure 4 is a sectioned elevation view of a further preferred embodiment of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

A first preferred embodiment of a recreation range 10 according to the invention will now be described with reference to Figures 1 to 3.

Accordingly in figure 1 is shown a field 11 of ovoid shape with periphery 12 and range carousel 13 offset from the field center. Preferably range carousel 13 is located at a somewhat higher level than the periphery 12 so that the surface 14 of field 11 slopes downwardly towards the periphery 12, the slope being sufficient to allow a ball 15 to roll towards periphery 12.

Arranged around periphery 12 of field 11 are target structures 16. Also arranged around periphery 12 are ball collection troughs 17 provided with underground shafts 18 sloping downwardly to the center of range carousel 13 to provide ball retrieval means. Range carousel 13 is offset from the field center so as to give as wide a range of distances as possible from the carousel 13 to the target structures 16 at field periphery 12.

In an alternative preferred embodiment illustrated in figure 4, the field 11 is constructed as a suspended surface 19 overlying a dished subsurface 20 where the

subsurface 20 rises from the center of range carousel 13 to the periphery 12 of the field 11. Peripheral openings 21 in the suspended field surface 18 allow for the entry of balls 15, these balls then rolling down the dished subsurface to collect at the central support column 22 of range carousel 13.

In a preferred embodiment as shown in figures 2 and 3 range carousel 13 is constructed with two player levels, upper level 23 and lower level 24 forming circular discs around central support column 22. The outer annular segment of each player level is divided into a plurality of player lanes 25 as may best be seen in figure 1. Upper level 23 is further provided with annular safety net 26 extending outwardly from its periphery.

Range carousel 13 is rotatably supported on bearings and driven by a suitable power source and drive train (not shown) to rotate the carousel about its central axis 27. Thus each player lane 25 is brought into alignment with every target structure 16 and any other feature of field 11 once every revolution of range carousel 13.

Each player lane 25 is provided with a ball delivery means 28 fed from a central ball distribution system 29 located in central support column 22. In a preferred embodiment, at least three sizes of balls 15 may be

selected by a player 30 so as to allow for players from young children to adults.

As well as being able to select a ball from the ball delivery means 28 of the range carousel 13, a player 30 may
5 elect to be passed a ball from any one of a number of ball mortars 31 disposed at various distances from the range carousel 13 and generally radial to its center. The manner of the pass is further selectable by a player 30 so that the trajectory 32 and delivery of the ball 15 by the ball
10 mortar 31 may simulate a variety of typical passes such as experienced in the game of soccer. Thus by means of the two methods of ball supply, a player may for example elect to kick a placed ball, kick a ball on the volley, "head" or "chest" a ball.

15 Balls 15 kicked or otherwise ejected by players 30 from the range carousel 13 may hit one of the target structures 16 at the field periphery 12 or fall short onto the sloping surface 14 or 19 of the field 11. In either case a used ball 15 will roll into a ball collection
20 through 17 or peripheral opening 21 and subsequently into its associated underground shaft 18 or onto subsurface 20 to thence roll downwardly to the central support column 22 of the range carousel 13.

Located in the base of the central support column 22 is ball collection and sorting chamber 33. For clarity figure 3 shows only a single size ball distribution system 29 but separate distribution pathways are provided for each size of ball offered for play. After sorting in chamber 33 balls 15 are raised to the upper level 23 for further distribution to the player lanes 25 on each player level.

Balls are provided sequentially for the duration of a playing session. In one preferred embodiment a playing session is limited to one revolution of the range carousel.

All balls are provided with a unique electronically readable recognition code. Target structures 16 are in this embodiment provided with a variety of target images which are fitted with sensors adapted to register the impact and recognition code of a ball. Sensors are associated with particular target images so that a point crediting system may award points to a player whose ball impacts a particular target image. Points gained by a player during a playing session are accrued to accord a score to the player. The score so gained is stored in a central database facility for subsequent retrieval if desired. Thus a players may play for the highest score among a group of players or an individual player may attempt to better his previous score in subsequent playing sessions.

To allow a player to select a method of play (ball from range carousel delivery means or from a ball mortar) and as a means of communicating a target hit and any points scored, each player lane is provided with a player terminal

5 34. Player terminals are provided with selection input means and score display means. Optionally terminals could also function as fee collection stations to allow a player to make deposits of playing fees for as many playing sessions as he or she wishes to play. Optionally terminals

10 may include a printing means so as to provide a player with a printed record of the game played and the points and score attained.

In a further preferred embodiment the surface of field 11 may be provided with a number of demarcated areas in the

15 vicinity of the range carousel, these areas provided with impact and coded registering sensors so as to allow players to practice heading or high kicking a ball with accuracy to land on a selected demarcated area.

Clearly the basic recreation range herein described

20 may be adapted in various ways to provide additional interest to players as well as providing additional revenue streams to the recreation range operator. Thus by way of example, certain target images or accrued scores may be associated with special prizes; target structures may be

adapted to carry advertising for products and the range
carousel could be provided with kiosk facilities.

CLAIMS

1. A recreation range system including a field and a rotatable range carousel.
2. The system of claim 1 wherein, said range carousel
5 is provided with at least one player level wherein the periphery of said player level is divided into a plurality of player lanes, said player lanes provided with ball delivery means and said field provided with ball retrieval means.
- 10 3. The recreation range system of claim 2 wherein the periphery of said field is provided with a plurality of target structures.
4. The recreation range system of claim 3 wherein said carousel is offset from the center of said field.
- 15 5. The recreation range system of claim 4 wherein the surface of said field slopes downwardly from said carousel to said periphery of said field.
6. The recreation range system of claim 5 wherein said
20 field is constructed as a suspended surface overlying a substantially dished subsurface.
7. The recreation range system of claim 1 wherein said carousel is provided with two player levels; an upper level and a lower level arranged one above the other around a central support column.

8. The recreation range system of claim 7 wherein said central support column is rotatably supported, said column and said carousel adapted to be urged in circular motion by a power source acting through a drive train.
9. The recreation range system of claim 8 wherein said ball delivery means and said ball retrieval means are adapted to process a range of ball sizes.
10. The recreation range system of claim 9 wherein said ball delivery means and said ball retrieval means are provided with a plurality of balls, each of said balls provided with a unique electronically readable ball recognition code.
11. The recreation range system of claim 10 wherein said ball retrieval means is adapted to return balls from the periphery of said field to said central support column.
12. The recreation range system of claim 11 wherein said ball retrieval means includes a plurality of ball collection troughs disposed around the periphery of said field, each of said collection troughs communicating with said central support column by underground shafts sloping downwardly from said periphery towards said central support column.

13. The recreation range system of claim 1 and claim 6 wherein said ball retrieval means includes a plurality of openings along the periphery of said field, said openings allowing balls to drop to said
5 dished subsurface.
14. The recreation range system of claim 12 and claim 13 wherein said ball delivery means is provided with a ball collections and sorting chamber adapted to sort said ball sizes and deliver sorted balls to
10 designated said player lanes.
15. The recreation range system of claim 14 wherein a player urges a ball to follow a trajectory from one of said player lanes in a generally radial direction from said range carousel towards said periphery of
15 said field.
16. The recreation range system of claim 15 wherein a ball urged by said player from said player lane towards said periphery of said field is tracked electronically.
- 20 17. The recreation range system of claim 16 wherein said target structures are adapted to display a variety of target images.
18. The recreation range system of claim 17 wherein said target images are provided with electronic sensor

means adapted to record the impact of a ball and the recognition code of said ball.

- 5 19. The recreation range system of claim 18 wherein said target images are associated with a point credit system, said credit system adapted to award credit points to a player when a ball urged by said player strikes said target image.
- 10 20. The recreation range system of claim 19 wherein said field may be adapted to display a number of target areas, said target areas provided with sensors to detect the impact of a ball and the recognition code of said ball.
- 15 21. The recreation range system of claim 20 wherein said credit points accruing to a player are electronically displayed on display means at the player lane used by said player.
- 20 22. The recreation range system of claim 21 wherein said credit points accrued to a player during a player session are stored in a central database storage facility as a score, said score being available for retrieval from said database for display at subsequent player sessions.

23. The recreation range system of claim 22 wherein said scores stored in said database storage facility are available for printout.
24. The recreation range system of claim 23 wherein said
5 scores are associated with a prize conferring system.
25. The recreation range system of claim 24 wherein said field is provided with a plurality of ball mortars arranged radially and at various distances from the
10 center of said range carousel, said ball mortars adapted to urge a ball into any one of a range of specified trajectories, said trajectories ending in the area of a player lane.
26. The recreation range system of claim 25 wherein said
15 trajectories are adapted to present a ball to a said player on said player lane simulating a range of ball approaches to a player as experienced in a game of soccer.
27. The recreation range system of claim 26 wherein said
20 ball retrieval means is adapted to provide said balls on demand to said ball mortars.
28. The recreation range system of claim 27 wherein said carousel is provided with amenities, said amenities including a kiosk.

29. The recreation range system of claim 28 wherein said upper player level is provided with a safety net extending radially outward from the periphery of said player level.
- 5 30. A method for operating a recreation range, said recreation range including a field and a rotatable range carousel, said range carousel provided with at least one player level wherein the periphery of said player level is divided into a plurality of player
10 lanes, said player lanes provided with ball delivery means and said field provided with ball retrieval means; said method comprising conveying players on a arcuate path over a portion of said range.
31. The method for the recreation range of claim 30.
15 wherein said field is of generally ovoid shape.
32. The method for the recreation range of claim 31 wherein the periphery of said field is provided with a plurality of target structures.
33. The method for the recreation range of claim 32
20 wherein said carousel is offset from the center of said ovoid shape.
34. The method for the recreation range of claim 33 wherein the surface of said field slopes downwardly from said carousel to said periphery of said field.

35. The method for the recreation range of claim 34 wherein said field is constructed as a suspended surface overlying a substantially dished subsurface.
36. The method for the recreation range of claim 30 wherein said carousel is provided with two player levels; an upper level and a lower level arranged one above the other around a central support column.
37. The method for the recreation range of claim 36 wherein said central support column is rotatably supported, said column and said carousel adapted to be urged in circular motion by a power source acting through a drive train.
38. The method for the recreation range of claim 37 wherein said ball delivery means and said ball retrieval means are adapted to process a range of ball sizes.
39. The method for the recreation range of claim 38 wherein said ball delivery means and said ball retrieval means are provided with a plurality of balls, each of said balls provided with a unique electronically readable ball recognition code.
40. The method for the recreation range of claim 39 wherein said ball retrieval means is adapted to

return balls from the periphery of said field to said central support column.

41. The method for a recreation range of claim 40 wherein said ball retrieval means includes a plurality of ball collection troughs disposed around the periphery of said field, each of said collection troughs communicating with said central support column by underground shafts sloping downwardly from said periphery towards said central support column.
42. The method for the recreation range of claim 30 and claim 35 wherein said ball retrieval means includes a plurality of openings along the periphery of said field, said openings allowing balls to drop to said dished subsurface.
43. The method for the recreation range of claim 41 and claim 42 wherein said ball delivery means is provided with a ball collections and sorting chamber adapted to sort said ball sizes and deliver sorted balls to designated said player lanes.
44. The method for the recreation range of claim 43 wherein a player urges a ball to follow a trajectory from one of said player lanes in a generally radial direction from said range carousel towards said periphery of said field.

45. The method for the recreation range of claim 44 wherein a ball urged by said player from said player lane towards said periphery of said field is tracked electronically.
- 5 46. The method for the recreation range of claim 45 wherein said target structures are adapted to display a variety of target images.
47. The method for the recreation range of claim 46 wherein said target images are provided with
10 electronic sensor means adapted to record the impact of a ball and the recognition code of said ball.
48. The method for the recreation range of claim 47 wherein said target images are associated with a point credit system, said credit system adapted to
15 award credit points to a player when a ball urged by said player strikes said target image.
49. The method for the recreation range of claim 48 wherein said field may be adapted to display a number of target areas, said target areas provided
20 with sensors to detect the impact of a ball and the recognition code of said ball.
50. The method for the recreation range of claim 49 wherein said credit points accruing to a player are

electronically displayed on display means at the player lane used by said player.

51. The method for the recreation range of claim 50 wherein said credit points accrued to a player during a player session are stored in a central database storage facility as a score, said score being available for retrieval from said database for display at subsequent player sessions.
52. The method for the recreation range of claim 51 wherein said scores stored in said database storage facility are available for printout.
53. The method for the recreation range of claim 52 wherein said scores are associated with a prize conferring system.
54. The method for the recreation range of claim 53 wherein said field is provided with a plurality of ball mortars arranged radially and at various distances from the center of said range carousel, said ball mortars adapted to urge a ball into any one of a range of specified trajectories, said trajectories ending in the area of a player lane.
55. The method for the recreation range of claim 54 wherein said trajectories are adapted to present a ball to a said player on said player lane simulating

a range of ball approaches to a player as experienced in a game of soccer.

56. The method for the recreation range of claim 55 wherein said ball retrieval means is adapted to provide said balls on demand to said ball mortars.
57. The recreation range system of claim 27 wherein said carousel is provided with amenities, said amenities including a kiosk.
58. The method for the recreation range of claim 57 wherein said ball retrieval means is adapted to provide said balls on demand to said ball mortars.
59. The method for the recreation range of claim 54 wherein said upper player level is provided with a safety net extending radially outward from the periphery of said player level.

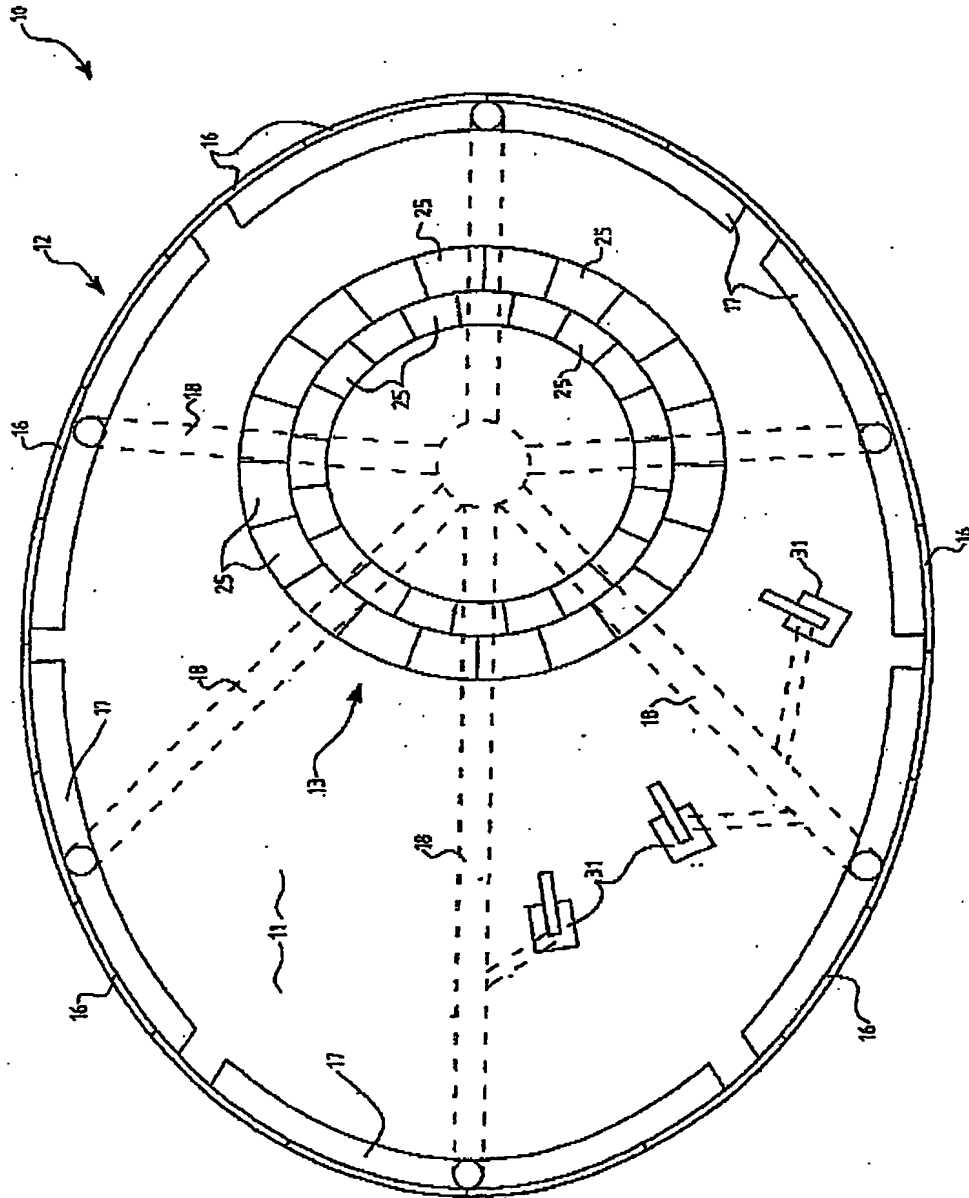


Fig. 1

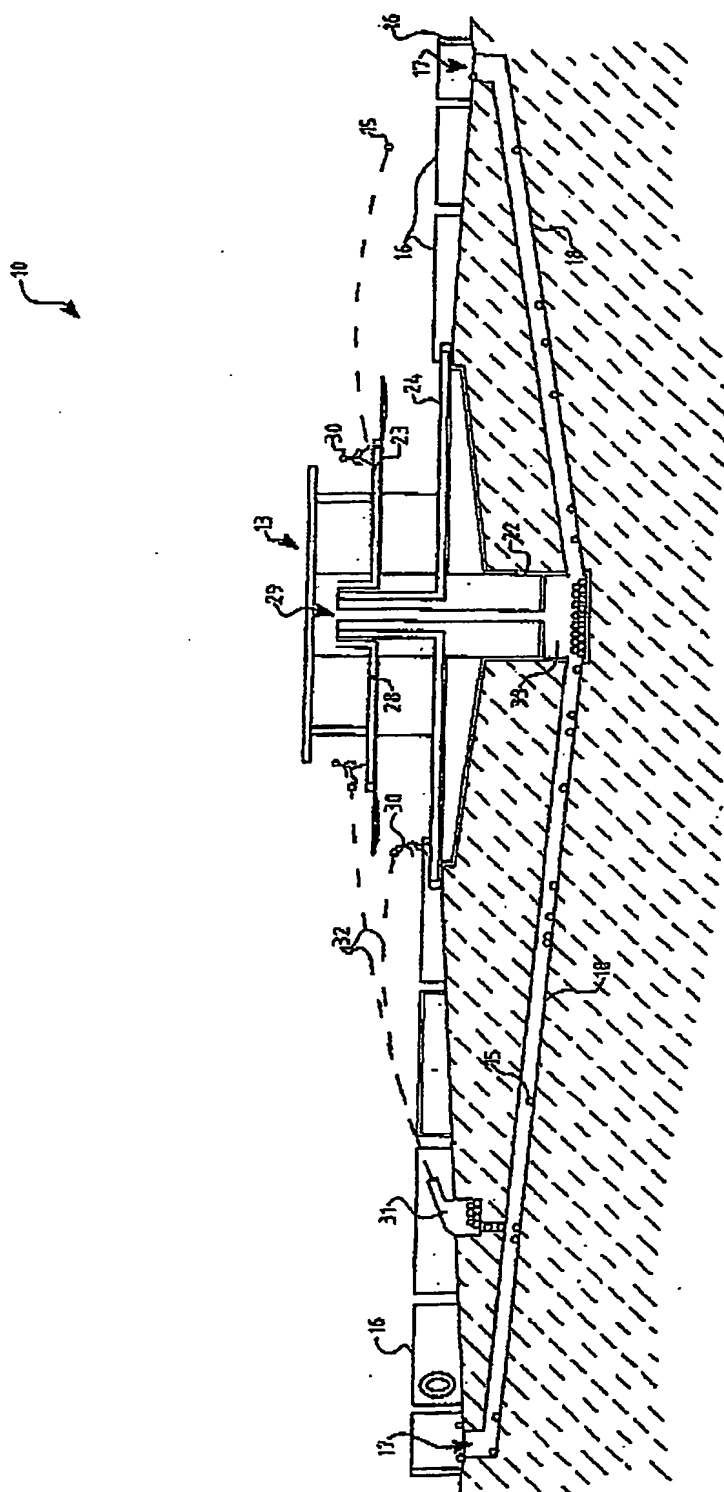


Fig. 2

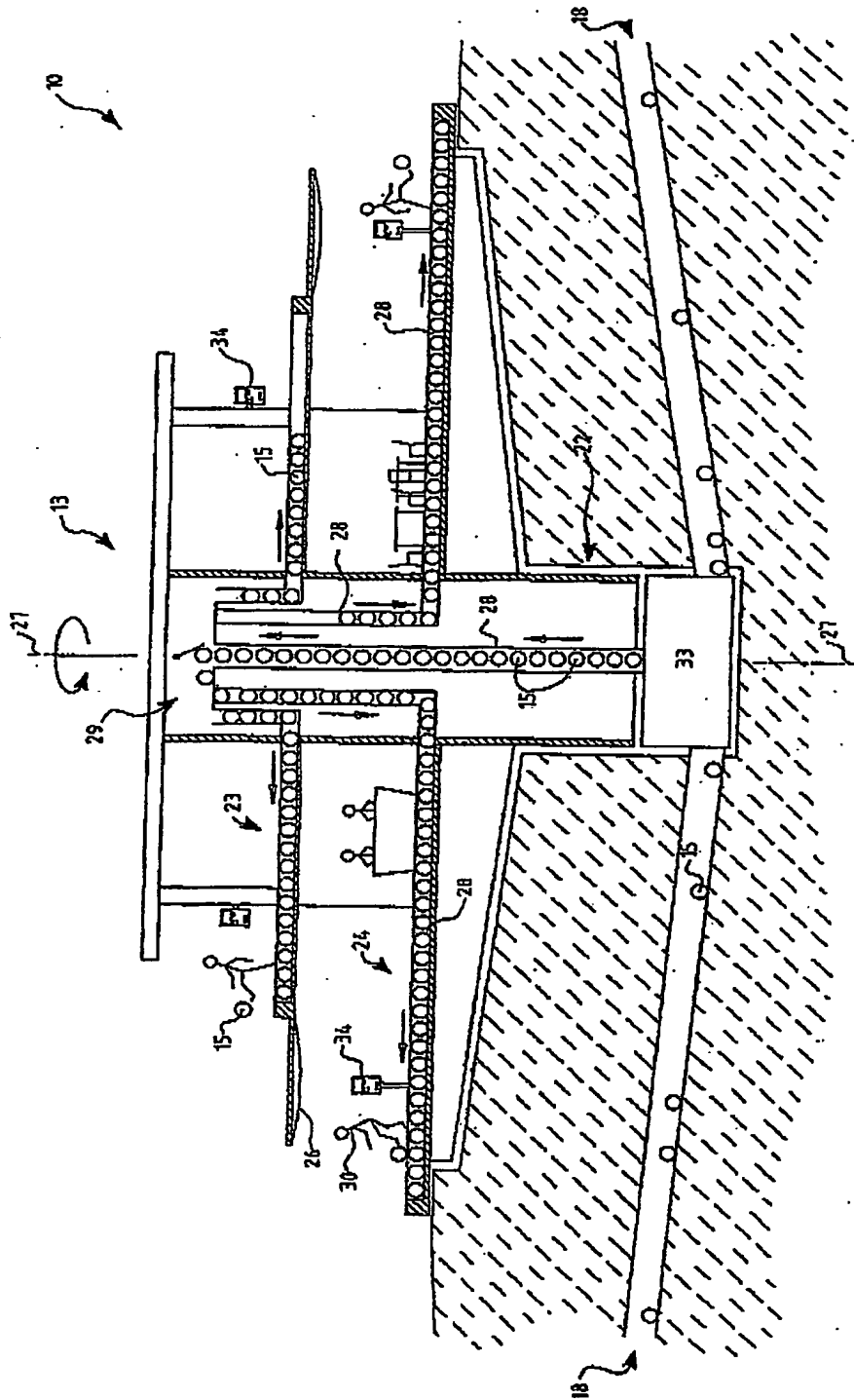
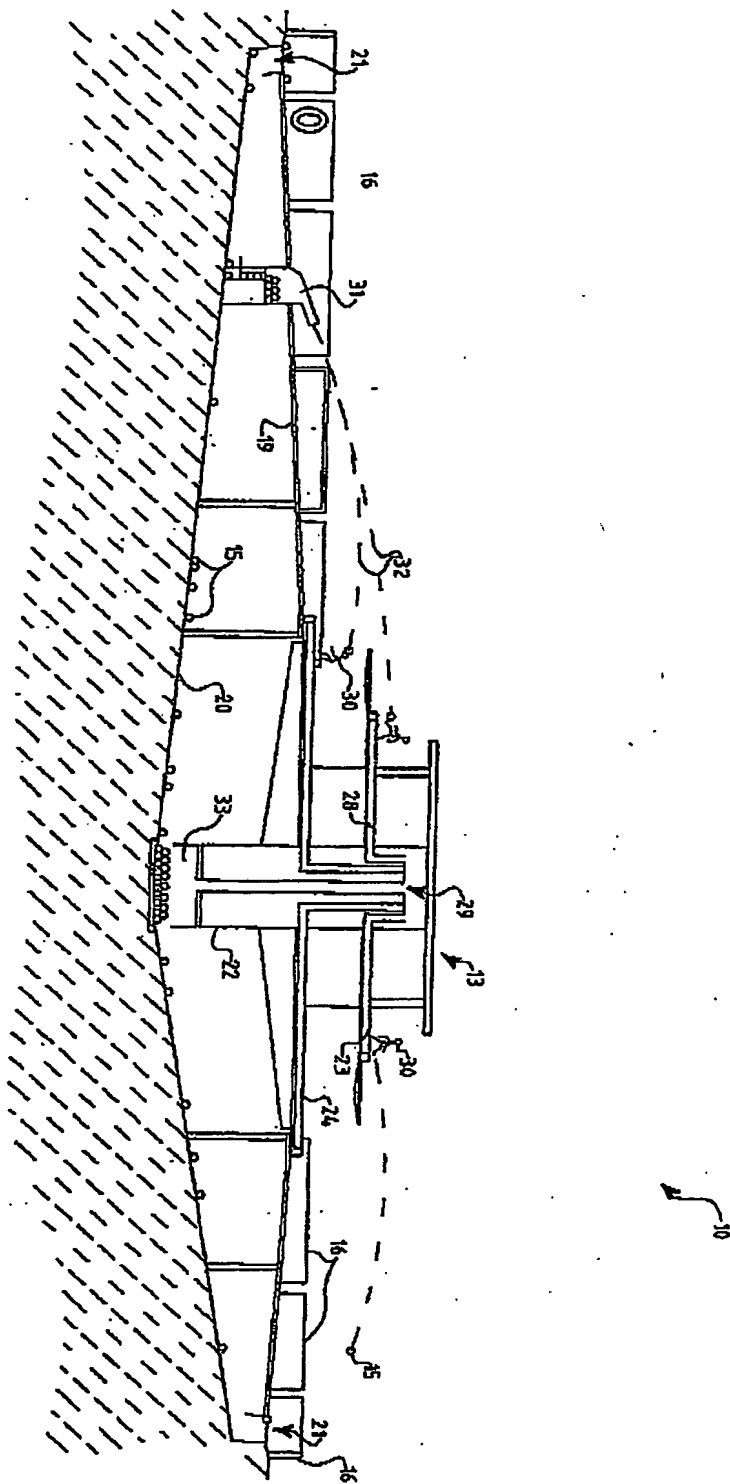


Fig. 3



INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU03/00949

A. CLASSIFICATION OF SUBJECT MATTER				
Int. Cl. ⁷ : A63B 71/00, 69/00, 47/02, A63C 19/00				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols)				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI IPC A63B 71/-, 69/-, 67/-, 63/-, A63C 19/-, E01C 13/-				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	WO 02/07827 A (TEE UP PTY LTD) 31 January 2002 Whole document	1- 59		
A	US 5171016 A (KAMAL) 15 December 1992 Whole document	1- 59		
<input type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex				
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<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>			
Date of the actual completion of the international search 26 September 2003		Date of mailing of the international search report - 3 OCT 2003		
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer SOOSA GNANASINGHAM Telephone No : (02) 6283 2172		

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU03/00949

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
WO 200207827	AU 20009006	AU 200156002	CA 2415195
	EP 1303334	US 2003162598	
US 5171016	NONE		
END OF ANNEX			